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09/893,703	06/29/2001	Reizo Maeda	010829	4945

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EXAMINER

ALEJANDRO, RAYMOND

ART UNIT PAPER NUMBER

1745

DATE MAILED: 06/28/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/893,703

Applicant(s)

MAEDA ET AL

Examiner

Raymond Alejandro

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 24 May 2005.
2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-5 and 9 is/are pending in the application.
4a) Of the above claim(s) _____ is/are withdrawn from consideration.
5) ☐ Claim(s) _____ is/are allowed.
6) ☒ Claim(s) 1-5 and 9 is/are rejected.
7) ☐ Claim(s) _____ is/are objected to.
8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
10) ☒ The drawing(s) filed on 29 June 2001 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____

DETAILED ACTION

Response to Amendment

This paper is in reply to the amendment dated 05/24/05. The applicants have not yet overcome the 35 USC 112 rejection, the 35 USC 102 rejection and the 35 USC 103 rejection. Refer to the abovementioned amendment for more details on applicant's rebuttal arguments. Thus, the foregoing rejections are still herein maintained as seen hereinafter and for the reasons of record.

Claim Rejections - 35 USC § 112

1. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

2. Claims 1-5 and 9 are rejected under 35 U.S.C. 112, first paragraph, because the specification, while being enabling "*for an aqueous polymeric material coating layer wherein the polymeric material may be styrene-methacrylic acid ester-acrylic acid ester copolymer, ethylene-acrylic acid ester copolymer, methacrylic acid methyl-butadiene copolymer, styrene-butadiene copolymer and butadiene polymer*", does not reasonably provide enablement for the large or infinite number of said polymeric material not including a fluorocarbon resin (other than the ones mentioned above). That is to say, the present claim language clearly encompasses any aqueous polymeric material other than fluorocarbon resins and the polymeric binding agent. It is noted that fluorocarbon resins can be considered a minority group of species within the all-encompassing and broad group of non-fluorocarbon resin compounds. The specification does

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not enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to use or make the invention commensurate in scope with these claims.

3. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

4. Claims 1-5 and 9 rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

5. Claim 1 is still indefinite because the negative limitation “*wherein an aqueous polymeric material not including a fluorocarbon resin*” is an attempt to claim the invention by excluding what the inventors did not invent rather than distinctly and particularly pointing out what they did invent. That is, the claims tend to define the invention in terms of what it is not, rather than pointing out the invention. *In re Schechter*, 205 F.2d 185, 98 USPQ 144 (Refer to MPEP 2173.05(i) Negative Limitations).

Claim Rejections - 35 USC § 102

6. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

7. Claims 1-5 and 9 are rejected under 35 U.S.C. 102(b) as being anticipated by Yuasa et al 5250369.

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The instant application is directed to a hydrogen absorbing alloy electrode wherein the disclosed inventive concept comprises the specific polymeric material coated thereon. Other limitations include the specific polymeric materials and the specific weight percent.

With respect to claim 1:

Yuasa et al disclose that a hydrogen absorbing alloy negative electrode for use in storage type battery is prepared through a process in which an alkali-resisting organic high molecule such as polyethylene, fluorocarbon polymer or the like, is added as a binding agent to a pulverized hydrogen absorbing alloy, and the resulting mixture is pressed onto or filled into an electric alloy conductive collector such as punching metal or a foam metal (Col 1, lines 37-45/Col 3, lines 50-67). Other alkali-resisting resins (binding agent) such as carboxymethylcellulose and methylcellulose or poly(vinyl alcohol) can also be employed (Col 14, lines 6-10). *It is noted that the binding agent assists to hold fast or adhere the electrode material to conductive collector.*

Examiner's note: *it is noted that applicant has argued now that the transitional phrase "composed of" is to be construed as closed-ended phrase and therefore does exclude other components. To be precise, applicant has contended that the foregoing phrase is meant to be interpreted in the same manner as either "consisting of" or "consisting essentially of". (See amendment of 05/24/05 at page 4, last two paragraphs).*

(***emphasis added*** →) **Example 1** shows the use of an aqueous solution of poly(vinyl alcohol) (the binding agent) mixed into the hydrogen absorbing alloy powder to form paste; and a foamed nickel porous matrix (the current collector) which is filled with the prepared paste and pressed (EXAMPLE 1/COL 4, lines 1-10). **Example 7** further shows the hydrogen absorbing

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alloy negative electrode is coated with polyethylene (the coating polymeric material)

(EXAMPLE 7/COL 4, lines 65-68). *Thus, in this case, the hydrogen absorbing alloy electrode consist of the hydrogen absorbing powder and a binding agent composed of a polymeric material (polyvinyl alcohol) adhered to the current collector, and being coated with polyethylene. Hence, the polymeric material in the coating layer is different from the polymeric material in the binding agent.*

With respect to claims 2-3:

It is disclosed that polyethylene used may be replaced by one of thermoplastic resins such as ABS resin (COL 14, lines 26-30). *It is noted that ABS resin stands for thermoplastic resins made of acrylonitrile-butadiene-styrene copolymer. It is also noted that styrene is an aromatic olefin and butadiene is a conjugated diene.*

With respect to claims 4-5:

It is disclosed that the hydrogen absorbing alloy negative electrode contains the resin by an amount of 1.5 wt % of the electrode (COL 5, lines 60-63).

With respect to claim 9:

It is disclosed that the hydrogen absorbing alloy electrode is for use in an alkaline storage battery (ABSTRACT/ COL 1, lines 11-14).

Thus, the claims are anticipated.

Claim Rejections - 35 USC § 103

8. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

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(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

9. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

10. Claims 1-5 and 9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yuasa et al 5250369 in view of Kinoshita et al 5527638.

The instant application is directed to a hydrogen absorbing alloy electrode wherein the disclosed inventive concept comprises the specific polymeric material coated thereon. Other limitations include the specific polymeric materials and the specific weight percent.

With respect to claim 1:

Yuasa et al disclose that a hydrogen absorbing alloy negative electrode for use in storage type battery is prepared through a process in which an alkali-resisting organic high molecule such as polyethylene, fluorocarbon polymer or the like, is added as a binding agent to a pulverized hydrogen absorbing alloy, and the resulting mixture is pressed onto or filled into an electric alloy conductive collector such as punching metal or a foam metal (Col 1, lines 37-45/Col 3, lines 50-67). Other alkali-resisting resins (binding agent) such as carboxymethylcellulose and methylcellulose or poly(vinyl alcohol) can also be employed (Col 14, lines 6-10). *It is noted*

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that the binding agent assists to hold fast or adhere the electrode material to conductive collector.

Examiner's note: *it is noted that applicant has argued now that the transitional phrase "composed of" is to be construed as closed-ended phrase and therefore does exclude other components. To be precise, applicant has contended that the foregoing phrase is meant to be interpreted in the same manner as either "consisting of" or "consisting essentially of". (See amendment of 05/24/05 at page 4, last two paragraphs).*

Example 1 shows the use of an aqueous solution of poly(vinyl alcohol) (the binding agent) mixed into the hydrogen absorbing alloy powder to form paste; and a foamed nickel porous matrix (the current collector) which is filled with the prepared paste and pressed (EXAMPLE 1/COL 4, lines 1-10). **Example 7** further shows the hydrogen absorbing alloy negative electrode is **coated with polyethylene** (the coating polymeric material) (EXAMPLE 7/COL 4, lines 65-68). *Thus, in this case, the hydrogen absorbing alloy electrode consist of the hydrogen absorbing powder and a binding agent composed of a polymeric material (polyvinyl alcohol) adhered to the current collector, and being coated with polyethylene. Hence, the polymeric material in the coating layer is different from the polymeric material in the binding agent.*

With respect to claims 2-3:

It is disclosed that polyethylene used may be replaced by one of thermoplastic resins such as ABS resin (COL 14, lines 26-30). *It is noted that ABS resin stands for thermoplastic resins made of acrylonitrile-butadiene-styrene copolymer. It is also noted that styrene is an aromatic olefin and butadiene is a conjugated diene.*

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With respect to claims 4-5:

It is disclosed that the hydrogen absorbing alloy negative electrode contains the resin by an amount of 1.5 wt % of the electrode (COL 5, lines 60-63).

With respect to claim 9:

It is disclosed that the hydrogen absorbing alloy electrode is for use in an alkaline storage battery (ABSTRACT/ COL 1, lines 11-14).

Yuasa et al disclose a hydrogen absorbing alloy electrode according to the foregoing aspects. However, Yuasa et al does not expressly disclose (*as argued by the applicants*) the specific aqueous polymeric material coating layer.

Kinoshita et al disclose a hydrogen storage alloy electrode comprising an electric alloy conductive support (the current collector) and a mixture supported on said conductive support (ABSTRACT). It is disclosed that the mixture supported thereon includes a styrene-butadiene copolymer (*it is noted that styrene-butadiene is an aqueous polymeric material*) (COL 3, lines 1-12/ CLAIM). Kinoshita et al clearly disclose the electrode is configured by coating the metal sheet (the conductive support) with the mixture composed mainly of the hydrogen storage alloy and the styrene-butadiene copolymer (COL 6, lines 3-7 and 30-34). *Thus, the styrene-butadiene also included in the mixture coats the electrode surface per se.*

The following parts of the Kinoshita et al's disclosure can be found in the abstract; at col 3, lines 3-12; and at col 6, lines 2-6:

[57]

ABSTRACT

A hydrogen storage alloy electrode comprising, an electrically conductive support made of a punched or perforated metal sheet, a mixture supported on said conductive support

a mixture supported on the electrically conductive support, and

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said mixture including;
a hydrogen storage alloy powder,
a styrene-butadiene copolymer having a styrene to buta-
diene weight ratio in a range of 100:30 to 100:100, as
a binder,

An electrode is configured by coating the punched or
perforated metal sheet having the abovementioned regular
perforation pattern with a mixture composed mainly of the
hydrogen storage alloy powder. The electrode thus obtained

In view of the above, it would have been obvious to a person of ordinary skill in the art at the time the invention was made to use the specific aqueous polymeric material coating layer of Kinoshita et al on the electrode of Yuasa et al because Kinoshita et al disclose that a small decrease in the capacity of the battery configured with the electrode attributable to the repetition of the charging and discharging processes and an excellent cycle life are advantageous features obtained by adding a styrene-butadiene copolymer resin (*the specific aqueous polymeric material coating layer*) in the mixture coating the electrode. Thus, Kinoshita et al at once envisage the advantage of using aqueous polymeric material as the electrode coating material; and Kinoshita et al directly teach the use of such aqueous polymeric material as instantly claimed. *Furthermore, the examiner likes to clarify that since the styrene-butadiene copolymer resin per se (the specific aqueous polymeric material coating layer) is coating the electrode itself, the prior art definitely meets the claimed requirement of having an aqueous polymeric material not including a fluorocarbon resin applied thereon, to form a coating layer.*

Response to Arguments

1. Applicant's arguments filed 05/24/05 have been fully considered but they are not persuasive.

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2. Even though applicant has argued now that the transitional phrase “*composed of*” is to be construed as closed-ended phrase and therefore does exclude other components; that is, it is meant to be interpreted in the same manner as either “consisting of” or “consisting essentially of” (See amendment of 05/24/05 at page 4, last two paragraphs), the examiner likes to contend that such transitional phrase only applies to the binder material (only one polymeric material). Therefore, the examiner strenuously asserted that the 35 USC 102 anticipatory rejection is still applicable because **Example 1** shows the use of an aqueous solution of poly(vinyl alcohol) (the binding agent) mixed into the hydrogen absorbing alloy powder to form paste; and a foamed nickel porous matrix (the current collector) which is filled with the prepared paste and pressed (EXAMPLE 1/COL 4, lines 1-10). **Example 7** further shows the hydrogen absorbing alloy negative electrode is **coated with polyethylene** (the coating polymeric material) (EXAMPLE 7/COL 4, lines 65-68). Thus, in this case, the hydrogen absorbing alloy electrode consists of the hydrogen absorbing powder and a binding agent composed of a polymeric material (polyvinyl alcohol) adhered to the current collector, and being coated with polyethylene. Hence, the polymeric material in the coating layer is different from the polymeric material in the binding agent. Thus, the prior art of record still provides the necessary structural interrelationship to meet the claimed requirement of having an electrode consisting of hydrogen absorbing alloy powder and a binding agent composed of a polymeric material adhered to a current collector and having thereon a coating layer comprising an aqueous polymeric material not including a fluorocarbon resin.

3. With respect to applicant’s argument concerning that “*the term “aqueous” is understood to mean “more aqueous than non-aqueous...the degree of aqueousness, i.e. more than 50 %”*”, it

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is noted that such term "aqueous" is a relative term which is not specifically defined by the claim, and the specification does not provide a standard for ascertaining or supporting applicant's characterization thereof. Thus, absent further specific definition (in the specification as filed) of the term "aqueous", the examiner respectfully submits that it is fairly reasonable to set forth that the polymer material of the prior art satisfies the unspecified degree of aqueousness.

4. In response to applicant's argument that the references fail to show certain features of applicant's invention, it is noted that the features upon which applicant relies (i.e., *the term "aqueous" is understood to mean "more aqueous than non-aqueous...the degree of aqueousness, i.e. more than 50 %"*) are not recited in the rejected claim(s). Although the claims are interpreted in light of the specification, limitations from the specification are not read into the claims. See *In re Van Geuns*, 988 F.2d 1181, 26 USPQ2d 1057 (Fed. Cir. 1993). Therefore, applicant's argument is not commensurate in scope with the specifically claimed invention.

5. Furthermore, in response to applicant's arguments that *"the Examiner is apparently interpreting the phrase of claim 1, "an aqueous polymeric material except fluorocarbon resin is applied thereon" as meaning that at least one component of the coating does not include fluorocarbon resin"*, the examiner merely asserts that even assuming arguendo that such applicant's characterization of the examiner's interpretation is correct, the prior art of record still clearly uses polyethylene as the electrode coating material (See Yuasa et al'369: EXAMPLE 7 at COL 4, lines 65-68); and to the best of the examiner's knowledge the polyethylene material is not a fluorocarbon resin. Additionally, even though its degree of being *"an aqueous polymeric material"* has been questioned by applicants, the fact is that: a) applicant's arguments stating that the FEP is not an aqueous polymeric material because it is a hydrophobic resin is yet

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insufficient as the present claim language also fails to fairly stipulate the degree of being aqueous. That is, under a broadest reasonable claim interpretation and in the absence of a specific degree of hydrophobicity or hydrophilicity and/or water-repellency in the specification to ascertain such requisite degree, it is believed that the prior art still provides the necessary structural and functional interrelationship of including a polymeric material not including a fluorocarbon resin per se.

6. Applicant's assertion that "*Kinoshita et al does not teach the aqueous resin coating the electrode*" because "*the styrene-butadiene resin is part of the electrode, and is actually the binder*" is still insufficient to overcome the 103 USC 103 rejection. In this respect, applicant's attention is politely directed to the following teachings of Kinoshita et al:

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ABSTRACT

A hydrogen storage alloy electrode comprising, an electrically conductive support made of a punched or perforated metal sheet, a mixture supported on said conductive support

a mixture supported on the electrically conductive support, and

said mixture including;

a hydrogen storage alloy powder,

a styrene-butadiene copolymer having a styrene to butadiene weight ratio in a range of 100:30 to 100:100, as a binder,

5 An electrode is configured by coating the punched or perforated metal sheet having the abovementioned regular perforation pattern with a mixture composed mainly of the hydrogen storage alloy powder. The electrode thus obtained

As expressly seen above and consistent with Kinoshita et al's teaching, the mixture including the hydrogen storage alloy powder and the styrene-butadiene copolymer is supported on the conductive support by directly coating said mixture containing the non-fluorocarbon resin on the electrode support. Therefore, it is asserted that Kinoshita et al clearly shows forming a layer

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comprising the claimed polymer material on the electrode substrate regardless its adhering degree. As a result, the prior art coating layer is a structural equivalent of the corresponding element/feature claimed in the instant invention. Moreover, the test for obviousness is not whether the features of a secondary reference may be bodily incorporated into the structure of the primary reference; nor is it that the claimed invention must be expressly suggested in any one or all of the references. Rather, the test is what the combined teachings of the references would have suggested to those of ordinary skill in the art (*←emphasis added*). See *In re Keller*, 642 F.2d 413, 208 USPQ 871 (CCPA 1981).

7. With reference to the 35 USC 112, 2nd paragraph rejection, the examiner likes to clarify his position concerning the recitation of the negative limitation “*not including a fluorocarbon resin*”. In no way it was intended to stipulate that such negative limitation fails to comply with written description requirement of not describing the subject matter in such a way as to reasonable convey to one skilled in the relevant art that the inventor had possession of the claimed invention as apparently understood by the applicants. The examiner simply wanted to address the issue that the current claims tend to define the invention in terms of what it is not, rather than pointing out the invention. For that reason, the examiner now believes that the 35 USC 112, 1st paragraph rejection (scope of enablement) better reflects the lack of clarity and uncertainty raised by such negative clause of claiming an all-embracing limitation and wide number of compounds without even enable to make or use the large number of non-fluorocarbon polymer resins.

Conclusion

8. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the mailing date of this final action.


Any inquiry concerning this communication or earlier communications from the examiner should be directed to Raymond Alejandro whose telephone number is (571) 272-1282. The examiner can normally be reached on Monday-Thursday (8:00 am - 6:30 pm).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Patrick J. Ryan can be reached on (571) 272-1292. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Raymond Alejandro
Primary Examiner
Art Unit 1745


RAYMOND ALEJANDRO
PRIMARY EXAMINER